1 Newton's Laws

Before we define each of the Laws we need to understand that in Pi-Space velocity maps to the diameter line and acceleration is an area change. Also mass is seen as a wave within a wave. In the case of mass, mass is seen as the wave within the Gravity wave.

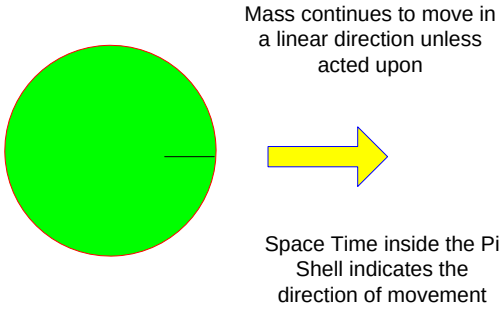
1.1 Newton's First Law

This law deals with the diameter line change.

Newton's first law of motion is often stated as: An object at rest tends to stay at rest and an object in motion tends to stay in motion with the same speed and in the same direction unless acted upon by an unbalanced force. This is commonly known as the "law of inertia" defined by Galileo.

A more intuitive way to describe it is that a Pi-Shell keeps doing what it is doing. For example, if a Pi-Shell is moving in space and there is no noticeable Gravity field or outside force on the Pi-Shell, it just keeps going in a straight line at the same speed.

From a Pi-Shell perspective, there are two important features to note here. The first one is that a Pi-Shell *remembers* which direction to travel in. The second factor is that a Pi-Shell diameter *remains the same.*



The way that a Pi-Shell knows which direction to travel in is that the Space Time component *inside* the Pi-Shell indicates that the shortest wavelengths are in the direction the Pi-Shell is moving. To certain extent, the Pi-Shell is falling forward at a constant velocity v. The Space Time inside the Pi-Shell is preserved and so too is the degree of compression.

1.2 Newton's Second Law

This law deals with the area change a Pi-Shell is subjected to with respect to acceleration. It also deals with the mass waves that are carried by that Pi-Shell.

Newton's second law of motion can be formally stated as follows: The rate of change of the momentum of a body is directly proportional to the net force acting on it, and the direction of the change in momentum takes place in the direction of the net force.

$$F = ma$$

In the advanced formulas, we show that the acceleration is a rate of change of area loss of a Pi-Shell.

The formulas for this is

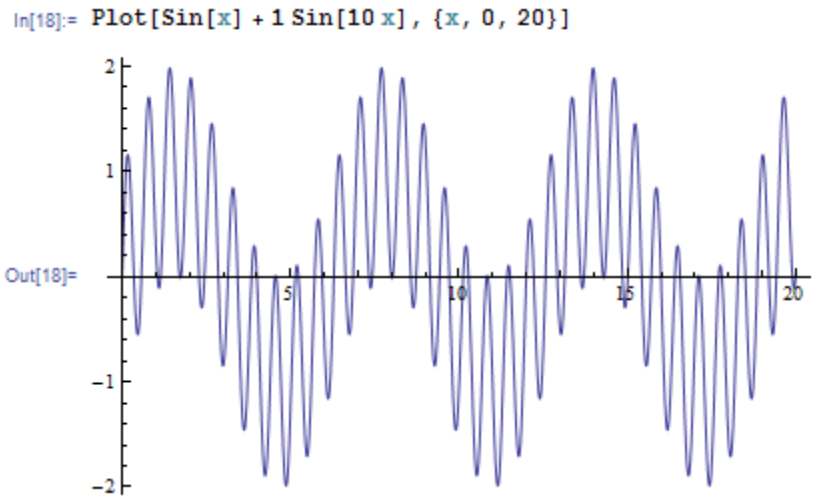
$$acceleration = \frac{v_2 - v_1}{t}\alpha$$

The α value is 1.0 where v << C and tends to 0 where v < C. For more details, please read the Advanced Formulas section.

Mass is treated as a wave within a wave in the Advanced Quantum Theory document. It is responsible for the Gravity waves which are produced by the Gravity formula. Each Pi-Shell that has mass contains these Mass waves.

They are drawn as follows.

1. Increasing Mass/Charge (10 mass/charge waves)



2. Greater Mass/Charge (50 mass/charge waves)

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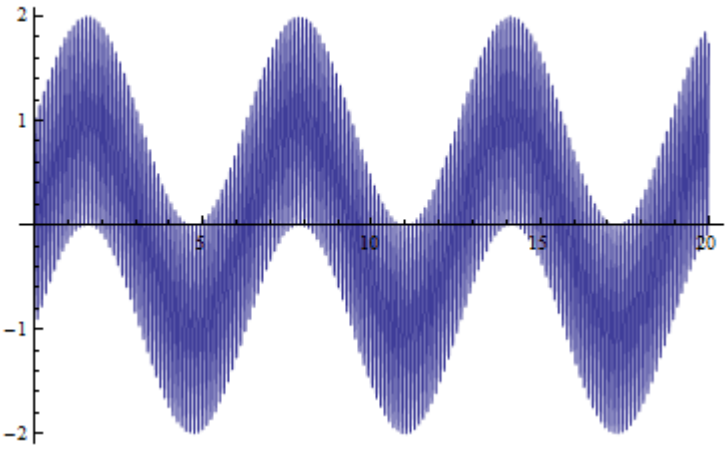


Therefore the "Force" is a combination of the area change of the Pi-Shell and the inner mass waves which shorten due to area loss. Smaller mass waves have higher energy and therefore force.

1.3 Newton's Third Law

This law is about balancing the area change and the mass wave energy between one or more Pi-Shells on competing sides.

Newton's third law: For every action, there is an equal and opposite reaction.

$$Faction = Freaction$$

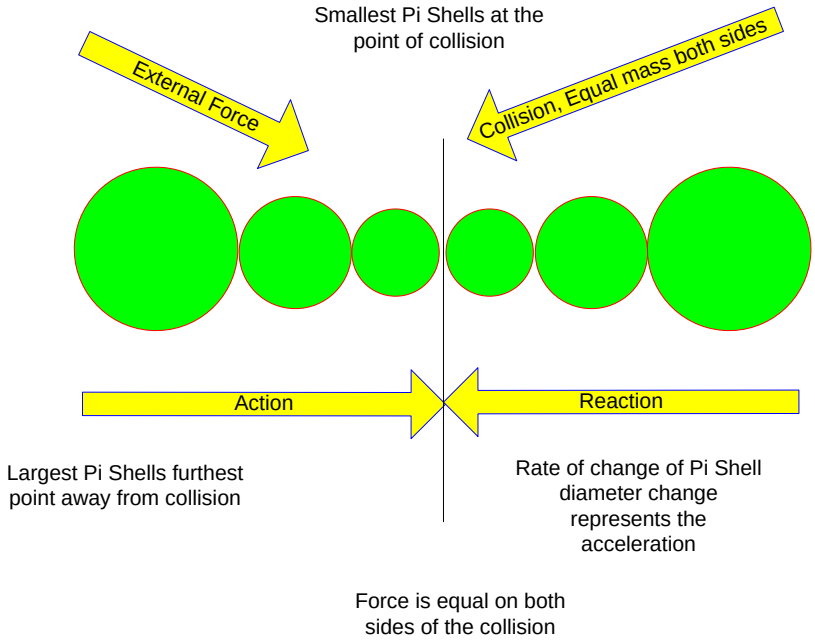
Therefore

$$m1.a1 = m2.a2$$

Where Pi-Shell group 1 is the action and group 2 is the reacting object.

This is a Pi-Shell law. One way to compress a Pi-Shell is to subject it to an external force. This law highlights the compressible nature of Pi-Shells, leading to accelerations resulting from an external force. Note: We're not dealing with Gravity doing this. It's one or more Pi-Shells colliding with other Pi-Shells.

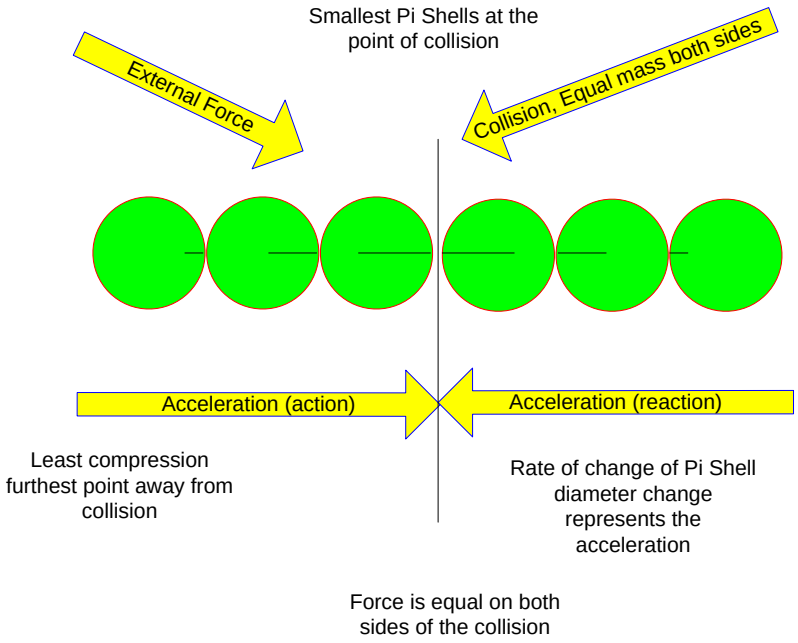
The first point to make about this law from a Pi-Shell perspective is to do with the sizes of the Pi-Shells. The shape of the action and reaction Pi-Shell pairs is to have the smallest Pi-Shells at the point of compression/collision and the largest at the furthest point of compression. The rate of change of Pi-Shell diameters represents the acceleration within the objects in questions. It's not explicitly stated in the Newtonian formula but one which becomes much clearer in Pi-Space. It's easier if we use an absolute Pi-Shell diagram to show this initially. The dramatic size change in the diameters is for illustration only. In reality, on our human scale, the change is quite small.



We can also represent this diagram using the traditional diameter line Pi-Shell diagram. Please note that this diagram represents the moment the Pi-Shells collide with one another and not the subsequent moments afterwards which I'll deal with shortly.

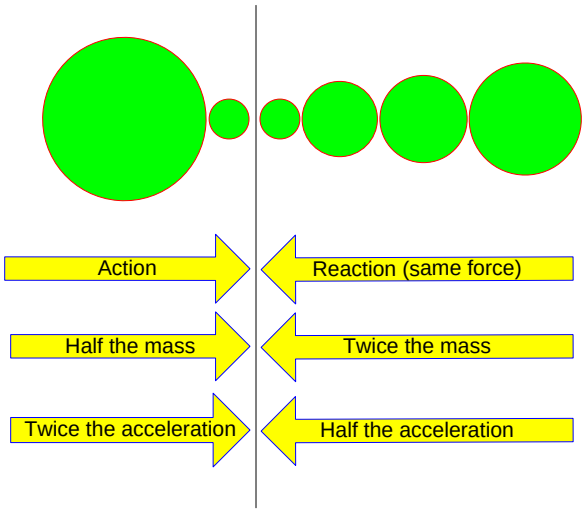
The action and reaction can both be re-interpreted as accelerations towards the point of contact. The Pi-Shell configuration is the same as the case for mass being attracted to a center of Gravity. However, this configuration does not last long as the object being collided with invariably moves away from the point of collision and the compression evens out (balancing the forces within the object).

Please bear this description in mind when I explain Einstein's Principle of Equivalence later on. For now, I will only deal with the action/reaction pairs at the moment of collision.



Note: Both diagram views are not exactly to scale.

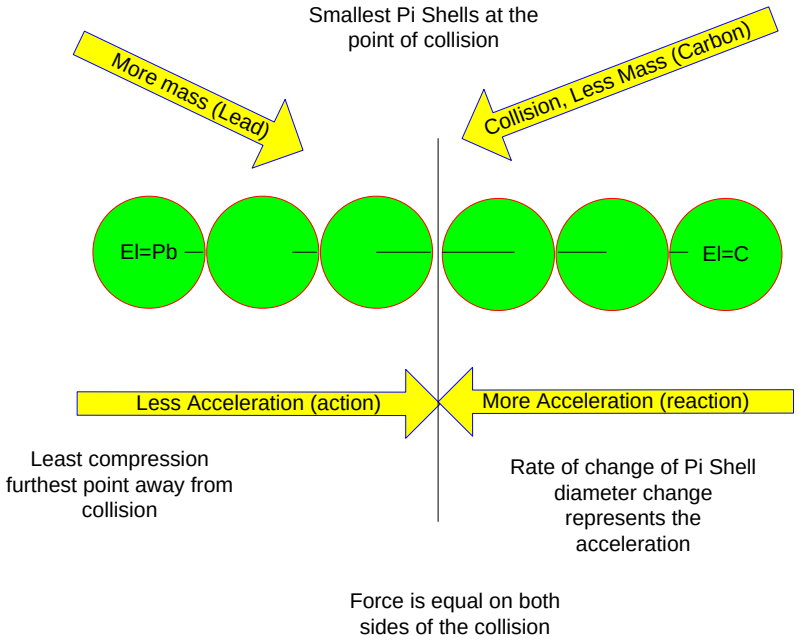
The total amount of compression is related to the mass times the acceleration. If there is more mass on one side of the action/reaction pair, there is therefore more compression on the other side of the pair. More compression means more acceleration. So a small car hitting a large lorry with more mass will experience more compression and subsequent acceleration which is a sub-component of force. Force therefore on both sides of the collision must equal.



This law is the basis of present rocket and space technology. When a rocket burns fuel, the burning fuel must push against the rocket in order to escape from it, thereby pushing the rocket upwards. If the burning fuel goes down, the ship must go up.

The analogy I am most comfortable with is the person stepping off the boat. The person must push against the boat in order to step off it. As the person does so, the boat is pushed back with an equal force. This is exactly the same when we walk, for example, across our kitchen. It's just that the mass of the Earth is so great, we do not notice it.

You can also have roughly have the same number of Pi-Shells on both sides of the action/reaction pairs but one side would have more mass and therefore the other side has more acceleration / Pi-Shell compression.



Please also read the document called The Particle, The Wave and The Momentum Shell. Also read, Momentum Interaction Diagrams. These documents cover Newton's Third Law in terms of Momentum Exchange and how Momentum is modeled as a Wave within Wave.